OUTPUT PENTODE

EL38

Output pentode primarily intended for use as line time base output valve in A.C. television receivers.

HEATER

V_h	6.3	V
I_h	1.4	A

CAPACITANCES

c_{in}	18	μμF
c_{out}	8.0	μμF ←
c_{a-g1}	<1.2	μμF

CHARACTERISTICS

V_a	275	V
V_{g2}	275	V
I_a	91	mA
I_{g2}	11	mA
V_{g1}	–9	V
g_m	14	mA/V
μ_{g1-g2}	16.5	
r_a	20	kΩ

OPERATION AS LINE OUTPUT PENTODE

Circuit Design

To allow for valve spread and for deterioration during life the line output stage should be designed around the following values :—

V_a	90	V
V_{g2}	275	V
I_a	150	mA

For the average new valve the following figures will apply:—

V_a	90	V
V_{g2}	275	V
V_{g1}	–1	V
I_a	225	mA

Typical Circuit (See circuit on page 3)

	V_b	300	V
For EL38	I_a	64	mA
	I_{g2}	18	mA
	R_k	120	Ω
For EBC33	I_a	0.8	mA

N.B.—Above figures measured under synchronised conditions.

LIMITING VALUES

$V_{a(b)}$ max.	1.2	kV
V_a max.	800	V
$v_{a(pk)}$ max.	8	kV
$V_{g2(b)}$ max.	800	V
V_{g2} max.	400	V
p_a max.	25	W
p_{g2} max.	8	W
I_k max.	200	mA
V_{g1} max. ($I_{g1}=+0.3\ \mu A$)	−1.3	V
R_{g1-k} max. (p_a <25W)	500	kΩ
R_{g1-k} max. (p_a <9 W)	800	kΩ
V_{h-k} max.	100	V
R_{h-k} max.	20	kΩ



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CIRCUIT VALUES (see circuit on page 3)

Resistors

	Value	Wattage	Tolerance
R_1	47 kΩ	¼ W	20%
R_2	330 kΩ	¼ W	10%
R_3	50 kΩ	1 W	Potentiometer
R_4	680 Ω	¼ W	10%
R_5	820 kΩ	¼ W	20%
R_6	120 Ω	1 W	20%
R_7	500 Ω	4 W	Potentiometer
R_8	2.2 kΩ	¼ W	20%
R_9	2.5 kΩ	4 W	Potentiometer
R_{10}	2.7 kΩ	4 W	20%
R_{11}	100 Ω	¼ W	20%

Capacitors

	Value	Tolerance	Wkg. Voltage
C_1	0.1 μF	20%	350 V
C_2	0.0022 μF	20%	350 V
C_3	0.01 μF	10%	350 V
C_4	0.001 μF	10%	350 V
C_5	0.004–0.006 μF	—	500 V

Transformers

T1 Ratio 1 : 3 (step-up into grid circuit)
T2 Ratio 4 : 1 primary inductance $\nless$1 H

Deflector Coils

Resistance 3 Ω
Inductance 6.5 mH

To provide full scan for 9″ picture tube (V_{a2}=7kV) with peak to peak current swing of 500 mA.

Notes

(i) Synchronising pulses may be applied negatively to the anode or positively to the grid of the EBC33.

(ii) The decoupling components (R_1 C_1) in the anode circuit of the EBC33 are necessary only if there is ripple on the H.T. line.

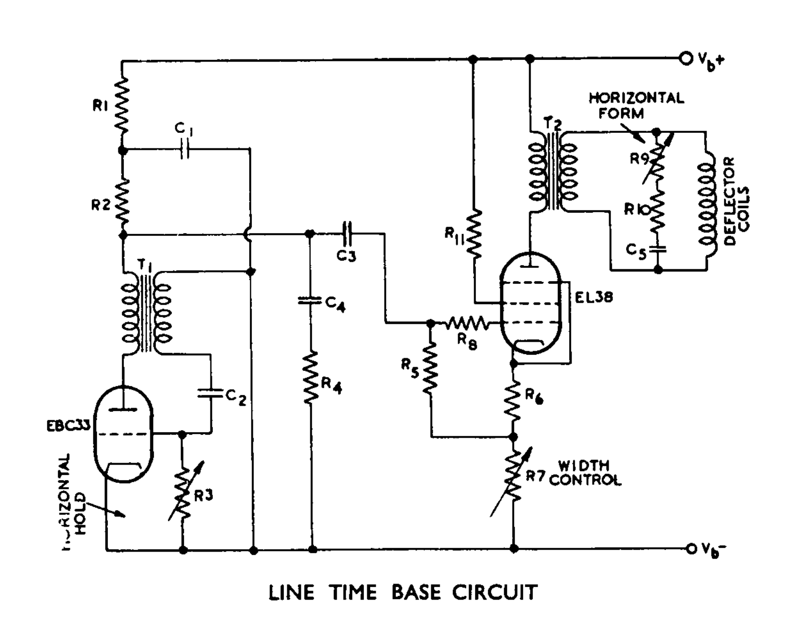
(iii) All potentiometers should be linear components to provide smooth control.



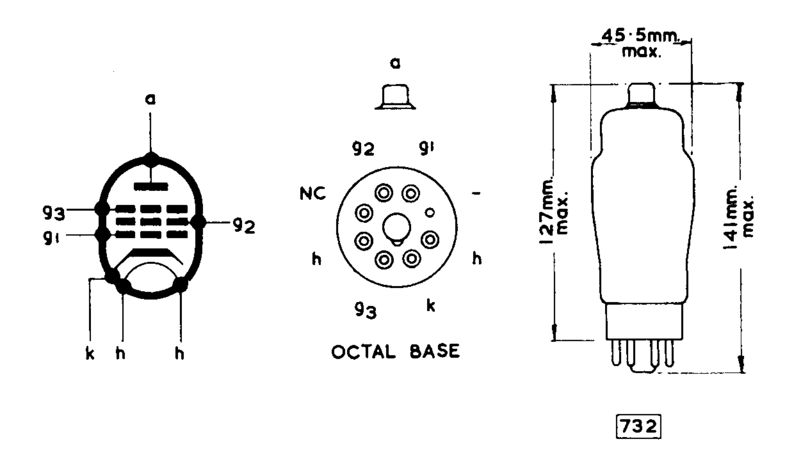
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LINE TIME BASE CIRCUIT

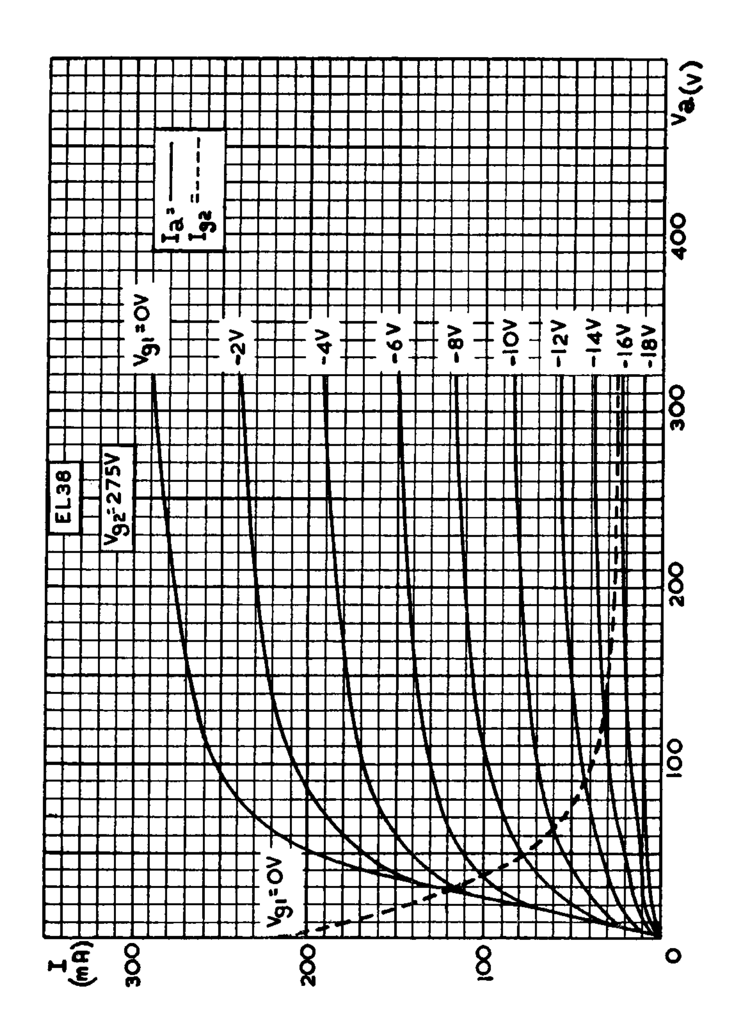


OCTAL BASE

EL38

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ANODE CURRENT AND SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER